

Sub B37
a' extruding an array of plural-component fibers, each comprising first and second materials having a relative difference in heat shrinkage of at least about ten percent;
depositing the array of plural-component fibers onto a moving surface to form a web;
applying heat to the web to cause separation between segments of the plural-component fibers comprising the first material and segments of the plural-component fibers comprising the second material due to differential heat shrinkage of the first and second materials; and
processing the web to form the nonwoven fabric.

2. The method according to claim 1, wherein said processing step includes bonding of the web to form a spunbonded fabric.

4. The method according to claim 1, wherein said applying step includes blowing hot air, steam or a combination of hot air and steam through the web.

5. The method according to claim 1, wherein said applying step includes applying radiant heat to the web.

6. The method according to claim 1, wherein said first and second materials are non-hydrophilic.

7. The method according to claim 1, wherein said extruding step includes forming the plural-component fibers as ribbon-shaped fibers.

8. The method according to claim 7, wherein the ribbon-shaped fibers comprise segments of the first material interleaved with segments of the second material.

9. The method according to claim 8, wherein the ribbon-shaped fibers are bicomponent fibers comprising alternating segments of the first material and segments of the second material.

41637 10. The method according to claim 1, wherein said extruding step includes forming plural-component fibers having a cross section in the shape of a cross, including a central segment comprising the first material and a plurality of radial segments comprising the second material and extending radially outward from the central segment.

11. The method according to claim 10, wherein the plural-component fibers formed in said extruding step further include a plurality of radial segments comprising the first material and extending radially outward from said plurality of radial segments comprising the second material.

12. The method according to claim 1, wherein said applying step includes moving the web past a heating unit at a rate that allows the segments of the plural-component fibers of a portion of the web to separate while the portion of the web is receiving heat from the heating unit.

13. The method according to claim 12, wherein the portion of the web receives heat from the heating unit for less than approximately one second.

14. The method according to claim 1, wherein differential heat shrinkage of the segments of a portion of the web and resultant fiber separation is substantially completed from application of less than approximately one second of heat.

15. The method according to claim 1, wherein said extruding step includes extruding plural-component fibers comprising: polypropylene; and polyethylene terephthalate modified with isophthalic acid and a powdered transesterification inhibitor.

16. The method according to claim 1, further comprising the step of attenuating the extruded array of plural-component fibers prior to depositing the array of plural-component fibers onto the moving surface.

Sub B37 17. The method according to claim 16, wherein said attenuating step includes drawing the array of plural-component fibers through an aspirator.

18. The method according to claim 16, wherein said attenuating step includes using at least one godet to draw or relax the array of plural-component fibers.

19. The method according to claim 1, wherein application of heat to the web causes the plural-component fibers to crimp.

20. The method according to claim 1, wherein no substantial separation of the segments of the plural-component fibers occurs prior to application of the heat to the web.

21. The method according to claim 1, wherein said processing step comprises through-air bonding of the web by heating the web to a temperature at which segments formed of one of said first and second materials begin to melt and adhere to adjacent segments.

101. (New) A method of forming a nonwoven fabric from a process employing fiber splitting in line with fiber extrusion, the method comprising the steps of:

extruding an array of plural-component fibers, each comprising first and second materials having a relative difference in heat shrinkage;

depositing the array of plural-component fibers onto a moving surface to form a web;

applying dry heat to the web to cause separation between segments of the plural-component fibers comprising the first material and segments of the plural-component fibers comprising the second material due to differential heat shrinkage of the first and second materials; and

processing the web to form the nonwoven fabric.

102. (New) The method according to claim 101, wherein said processing step includes bonding of the web to form a spunbonded fabric.

103. (New) The method according to claim 101, wherein said applying step includes blowing hot air through the web.

104. (New) The method according to claim 101, wherein said applying step includes applying radiant heat to the web.

105. (New) The method according to claim 101, wherein said first and second materials are non-hydrophilic.

106. (New) The method according to claim 101, wherein said extruding step includes forming the plural-component fibers as ribbon-shaped fibers.

107. (New) The method according to claim 106, wherein the ribbon-shaped fibers comprise segments of the first material interleaved with segments of the second material.

108. (New) The method according to claim 106, wherein the ribbon-shaped fibers are bicomponent fibers comprising alternating segments of the first material and segments of the second material.

109. (New) The method according to claim 101, wherein said extruding step includes forming plural-component fibers having a cross section in the shape of a cross, including a central segment comprising the first material and a plurality of radial segments comprising the second material and extending radially outward from the central segment.

110. (New) The method according to claim 109, wherein the plural-component fibers formed in said extruding step further include a plurality of radial segments comprising the first material and extending radially outward from said plurality of radial segments comprising the second material.

111. (New) The method according to claim 101, wherein said applying step includes moving the web past a heating unit at a rate that allows the segments of the plural-component

fibers of a portion of the web to separate while the portion of the web is receiving heat from the heating unit.

112. (New) The method according to claim 111, wherein the portion of the web receives heat from the heating unit for less than approximately one second.

113. (New) The method according to claim 101, wherein differential heat shrinkage of the segments of a portion of the web and resultant fiber separation is substantially completed from application of less than approximately one second of heat.

114. (New) The method according to claim 101, wherein said extruding step includes extruding plural-component fibers comprising: polypropylene; and polyethylene terephthalate modified with isophthalic acid and a powdered transesterification inhibitor.

Ar 115. (New) The method according to claim 101, further comprising the step of attenuating the extruded array of plural-component fibers prior to depositing the array of plural-component fibers onto the moving surface.

116. (New) The method according to claim 115, wherein said attenuating step includes drawing the array of plural-component fibers through an aspirator.

117. (New) The method according to claim 115, wherein said attenuating step includes using at least one godet to draw or relax the array of plural-component fibers.

118. (New) The method according to claim 101, wherein application of heat to the web causes the plural-component fibers to crimp.

119. (New) The method according to claim 101, wherein no substantial separation of the segments of the plural-component fibers occurs prior to application of the heat to the web.

120. (New) The method according to claim 101, wherein said processing step comprises through-air bonding of the web by heating the web to a temperature at which segments formed of one of said first and second materials begin to melt and adhere to adjacent segments.

121. (New) A method of forming a nonwoven fabric from a process employing fiber splitting in line with fiber extrusion, the method comprising the steps of:

extruding an array of plural-component fibers, each comprising first and second materials having a relative difference in heat shrinkage, wherein said first and second materials are non-hydrophilic;

depositing the array of plural-component fibers onto a moving surface to form a web;

applying heat to the web to cause separation between segments of the plural-component fibers comprising the first material and segments of the plural-component fibers comprising the second material due to differential heat shrinkage of the first and second materials; and

processing the web to form the nonwoven fabric.

122. (New) The method according to claim 121, wherein said processing step includes bonding of the web to form a spunbonded fabric.

123. (New) The method according to claim 121, wherein said applying step includes blowing hot air, steam or a combination of hot air and steam through the web.

124. (New) The method according to claim 121, wherein said applying step includes applying radiant heat to the web.

125. (New) The method according to claim 121, wherein said extruding step includes forming the plural-component fibers as ribbon-shaped fibers.

122. (New) The method according to claim 125, wherein the ribbon-shaped fibers comprise segments of the first material interleaved with segments of the second material.

123. (New) The method according to claim 125, wherein the ribbon-shaped fibers are bicomponent fibers comprising alternating segments of the first material and segments of the second material.

124. (New) The method according to claim 121, wherein said extruding step includes forming plural-component fibers having a cross section in the shape of a cross, including a central segment comprising the first material and a plurality of radial segments comprising the second material and extending radially outward from the central segment.

125. (New) The method according to claim 124, wherein the plural-component fibers formed in said extruding step further include a plurality of radial segments comprising the first material and extending radially outward from said plurality of radial segments comprising the second material.

126. (New) The method according to claim 121, wherein said applying step includes moving the web past a heating unit at a rate that allows the segments of the plural-component fibers of a portion of the web to separate while the portion of the web is receiving heat from the heating unit.

127. (New) The method according to claim 121, wherein the portion of the web receives heat from the heating unit for less than approximately one second.

128. (New) The method according to claim 121, wherein differential heat shrinkage of the segments of a portion of the web and resultant fiber separation is substantially completed from application of less than approximately one second of heat.

129. (New) The method according to claim 121, wherein said extruding step includes extruding plural-component fibers comprising: polypropylene; and polyethylene terephthalate modified with isophthalic acid and a powdered transesterification inhibitor.

130. (New) The method according to claim 121, further comprising the step of attenuating the extruded array of plural-component fibers prior to depositing the array of plural-component fibers onto the moving surface.

131. (New) The method according to claim 130, wherein said attenuating step includes drawing the array of plural-component fibers through an aspirator.

132. (New) The method according to claim 130, wherein said attenuating step includes using at least one godet to draw or relax the array of plural-component fibers.

ar 133. (New) The method according to claim 121, wherein application of heat to the web causes the plural-component fibers to crimp.

134. (New) The method according to claim 121, wherein no substantial separation of the segments of the plural-component fibers occurs prior to application of the heat to the web.

135. (New) The method according to claim 121, wherein said processing step comprises through-air bonding of the web by heating the web to a temperature at which segments formed of one of said first and second materials begin to melt and adhere to adjacent segments.--

REMARKS

Claims 1, 2, and 4-21 and 101-135 are pending in the subject application. Claims 1-21 have been examined, and claims 22-100 have been withdrawn from consideration as being nonelected in relation to a previous restriction requirement. Claims 1-21 stand rejected. By the above amendments, claim 1 has been amended, claims 3 and 22-100 have been canceled without any prejudice or disclaimer of the subject matter thereof. Applicant expressly reserves the right to file divisional applications with respect to the subject matter of claims 22-100. New claims 101-135 have been added. Support for the amendment and new claims can be found throughout the specification. Further, new claims 101-135 are directed to the elected invention and are based upon the subject matter presented in original claims 1-21. Favorable reconsideration of